

Application No.: 10/003,248

Docket No.: 21065-00160-US

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS

1. (Currently Amended) System for assembling a first part-(5) to a second part-(2,9) by means of a ball anchoring device featuring a basically cylindrical lock body-(10) comprising a central bore-(13) and an annular wall-(14) featuring radial holes-(15) to accommodate radially mobile balls-(16), and a locking piston-(20) that slides axially within the body bore between a released position and a locked position where a piston head-(22) keeps the balls pressed outwards and protruding from a surface of the body, the two parts featuring surfaces that are applied against each other,

wherein ~~characterized in that~~ the lock body-(10) is inserted into a first hole-(7) made in the surface of the first part and into a second hole-(8) made in the surface of the second part, the two holes being more or less coaxial, the lock body features a flange-(12) bearing against a spring thrust element (18) which in turn bears against the a free surface of the first part around the first hole ~~through a spring thrust element (18)~~, and the balls (16) are maintained partly protruding under a free surface-(82) of the second part, in angular contact with the edge-(81) of the second hole-(8) opening into the free surface of the second part, and bearing against a lateral retaining surface-(23) of the piston head (22), the lateral retaining surface displaying in an area of contact of each ball a gradient such that under the effect of an axial thrust applied to the balls by the body through the load applied to the flange-(12) by the spring thrust element-(18), the contact of each ball on the lateral surface maintains the piston-(20) in the locked position.

2. (Previously presented) Assembly system in accordance with claim 1, ~~characterized in that~~ wherein the spring thrust element is a tapered washer-(18) encircling the body (10).

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3. (Currently amended) Assembly system in accordance with claim 1, ~~characterized in that wherein~~ the system features a snap ring-(17) that encircles the body, said snap ring being designed to maintain the balls-(16) in a retracted position in the holes in the body before the body is inserted into the holes in the parts to assemble and when the piston (20) is in the released position, and where the diameter of at least one of the holes-(7, 8) is smaller than the outside diameter of the snap ring-(17).

4. (Currently amended) Assembly system in accordance with claim 1, ~~characterized in that wherein~~ the body-(10) joined to the first part-(5) by one or more lugs-(51) attached to the first part and holding the flange-(12), and the spring thrust element-(18) gripped between one or more lugs and the surface-(55) of the first part.

5. (Currently amended) Assembly system in accordance with claim 1, ~~characterized in that wherein~~ the piston-(20) features a rod-(21) whose upper end-(28) opposite to the piston head protrudes beyond the body and features a means for gripping-(29) on which a release tool-(40) can be fitted to move the piston out of the locking position.

6. (Currently amended) Assembly system in accordance with claim 3, ~~characterized in that wherein~~ a tip of the piston head-(22) beyond the lateral retaining surface has a toroidal zone recess-(25) that accommodates the balls-(16) when the balls are held in the retracted position by the snap ring-(17), the recess featuring a far edge-(26) that turns outwards towards a periphery and, by axially abutting on the balls in the retracted position, prevents the piston from coming out of the body.

7-11 (Cancelled)

12. (Previously presented) A ball anchoring device for fastening first and second parts together, the device comprising:

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a generally cylindrical lock body having a central bore bounded by an annular wall;

radial holes formed in the annular wall to receive radially movable balls;

a locking piston that slides axially within the bore between a released position and a locked position;

the piston having a head for contacting the balls and urging them radially outwards for protrusion from the surface of the body;

a first hole formed in the first part positioned in coaxial relationship with a second hole formed in the second part;

the lock body being received in the first and second holes;

an axially movable spring thrust element extending outwardly from the lock body and bearing against the periphery of the first hole;

a flange extending outwardly from the lock body and bearing against the spring thrust element;

balls partly protruding radially outwards from the lock body, under a surface of the second part, in contact with an edge of the hole in the second part, and bearing radially inwards against a tapered lateral retaining surface of the piston head, thereby maintaining the piston in a locked position.

13. (Previously presented) The device set forth in claim 12, wherein the spring thrust element is a tapered washer encircling the lock body.

14. (Previously presented) The device set forth in claim 12, together with a snap ring encircling the lock body and retaining the ball in a retracted position within the holes of the lock body prior to fastening the first and second parts together, when the piston is in a released position, and wherein the diameter of at least one of the holes of the first or second part is smaller than an outer diameter of the snap ring.

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15. (Previously presented) The device set forth in claim 12, together with at least one lug secured at a first end thereof to the first part, a second end of the lug bearing against the flange for maintaining the spring thrust element between the flange and the first part.

16. (Previously presented) The device set forth in claim 12, wherein the piston includes a rod section, the outer end of which extends outwardly of the body, and the inner end of which is connected to the piston head, the outer end of the rod having means for gripping the rod to displace the piston to an unlocked condition.

17. (Previously presented) The device set forth in claim 14, wherein an inward end section of the piston head has a circular recess for contacting the balls when the balls are held in the retracted position by the snap ring, the recess having an inward end that is flared outwardly toward the wall of the lock body, the recess receiving the balls when retracted to cause an interference fit with the holes that prevents the piston from being extracted from the lock body.

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(cont)
18. (Previously presented) A ball anchoring device for fastening first and second parts together, the device comprising:

a generally cylindrical lock body having a central bore bounded by an annular wall;

radial holes formed in the annular wall to receive radially movable balls;

a locking piston that slides axially within the bore between a released position and a locked position;

a slidable snap ring encircling the lock body radially outwardly of the holes for containing the balls in the body, sliding displacement of the snap ring permitting displacement of the balls to protrude radially outwardly from the holes;

the piston having a head that includes:

a) a contour for receiving the balls when the lock body is in a released condition;

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and

b) a tapered surface for urging the balls outwards to a locked position when the piston is pushed into the body thereby preventing free movement of the piston towards the released position.

19. (Previously presented) The device set forth in claim 18, wherein the balls are contained by the snap ring while the piston maintains a released position.

20. (Previously presented) The device set forth in claim 19, wherein the piston head contour is formed in a cylindrical surface of the piston head.

21. (Previously presented) The device set forth in claim 18, wherein the tapered surface of the piston head has an edge of maximum diameter that is located beyond the position of the balls when the piston is in the locked position.

22. (Previously presented) The device set forth in claim 12, together with a tool that is positioned over the piston and in contact with the flange, displacement of the tool applying a thrust force to the piston causing the snap ring to move on the body, and causing the body to be inserted in the first and second holes until the balls are situated partly below the second part, the thrust force being sufficient to compress the spring thrust element between the flange and the first part until the piston assumes a locked position.